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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,562	12/18/2001	David R. Bartkowiak	01-178	2677

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CATERPILLAR INC.
100 N.E. ADAMS STREET
PATENT DEPT.
PEORIA, IL 616296490

EXAMINER

KIM, CHRISTOPHER S

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,562

Applicant(s)

BARTKOWIAK ET AL

Examiner

Christopher S. Kim

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 12-19, 21-23 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) 19, 21-23 and 25-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10 and 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on February 2, 2006 is acknowledged. The traversal is on the ground(s) that an examination of the entire application would be non-burdensome because previous Office actions examined the entire application. This is not found persuasive because applicant's amendment pursues divergent subject matter which is patentably distinct as outlined in the Restriction requirement mailed on December 30, 2005.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 19, 21-23, 25-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 2, 2006.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

4. Claims 10, 13, 14, 15, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wich (4,408,718) in view of Jones, Jr., et al (3,449,815).

Wich discloses a fuel injector comprising:

a lower outer body 20;

- a tip 26;
- at least one orifice 97;
- a fuel passage 94;
- a needle valve 95;
- an upper body 10 having a bore 14a;
- a plunger 15;
- a fuel pressurization chamber 19;
- a cartridge valve assembly 11;
- a first fluid bore 52;
- a second fluid bore 51.

Wich fails to disclose a high pressure seal. Jones discloses a high pressure seal 16 in passage 15. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided Jones' seal 16 in the passage 51, 52 of Wich for added strength (Jones, column 3, lines 6-17).

Regarding claims 14 and 15, Jones discloses, in column 3, lines 30-40, the dimensions of the sleeve but does not specifically disclose that the sleeve has a wall thickness of 1 mm. Jones discloses that the wall thickness is 0.125 inch (3.175 mm) but that the dimension is an example and not meant to be limiting. Providing a wall thickness of 1 mm or less is an optimization of workable ranges. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a wall thickness of 1 mm or less, since it has been held that where the

Art Unit: 3752

general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wich (4,408,718) in view of Kenny (959,546).

Wich discloses a fuel injector comprising:

- a lower outer body 20;
- a tip 26;
- at least one orifice 97;
- a fuel passage 94;
- a needle valve 95;
- an upper body 10 having a bore 14a;
- a plunger 15;
- a fuel pressurization chamber 19;
- a cartridge valve assembly 11;
- a first fluid bore 52;
- a second fluid bore 51.

Wich discloses a seal 124 but Wich's seal is an O-ring that sits in groove 125 rather than a cylindrical sleeve that fits in the first and second fluid bores. Kenny discloses a cylindrical sleeve seal 4 press fitted into tube sections 1 and 2 (Kenny, page 1, lines 85-92). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have replaced Wich's O-ring seal 124 with Kenny's sleeve

Art Unit: 3752

seal 4 to provide a fluid seal and maintain an in-line passage (Kenny, page 1, lines 35-42).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (5,524,825) in view of Jones, Jr., et al (3,449,815).

Ueda discloses a fuel injector comprising:

- a lower outer body 4;
- a tip 45;
- at least one orifice (inherent);
- a fuel passage 47;
- a needle valve 45a;
- an upper body 10 having a bore 3;
- a plunger 37;
- a fuel pressurization chamber 33;
- a cartridge valve assembly 5;
- a first fluid bore 18;
- a second fluid bore (section of passage 18 in cartridge valve assembly 5).

Ueda fails to disclose a high pressure seal. Jones discloses a high pressure seal 16 in passage 15.).

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (5,524,825) in view of Jones, Jr., et al (3,449,815) as applied to claim 10 above, and further in view of Campion et al. (6,802,457).

Ueda in view of Jones discloses the limitations of the claimed invention with the exception of pressures in excess of 20,000 PSI, i.e., exposing the cylindrical seal to pressures in excess of 20,000 PSI. The 20,000 PSI is merely a working condition of the fuel pressure in the fuel injector. Campion teaches that it is common for fuel injectors to mechanically compress liquid fuel in excess of 20,000 PSI (Campion, column 1, lines 25-38). Ueda's fuel injector is of the type that mechanically compresses liquid fuel using plunger 37. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have operated the injector of Ueda in view of Jones where the fuel pressure exceeds 20,000 PSI for injection into engines operating at such pressures as disclosed by Campion.

Response to Arguments


8. Applicant's arguments with respect to claims 10 and 12-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (571) 272-4905. The examiner can normally be reached on Monday - Thursday, 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571) 272-4919. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christopher S. Kim
Primary Examiner
Art Unit 3752

CK